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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,082	01/15/2004	Yasushi Abe	6453P025	1897

8791 7590 11/26/2007

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EXAMINER	
SHIKHMAN, MAX	

ART UNIT	PAPER NUMBER
2624	

MAIL DATE	DELIVERY MODE
11/26/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/760,082	ABE ET AL.	
	Examiner	Art Unit	
	Max Shikhman	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06/07/2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12,13,15 and 18-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *12,13,15,18,19,20* is/are rejected.

7)☒ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/12/2007, 08/31/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

1. Applicants' response to the last Office Action, filed 06/07/2007 has been entered and made of record.

Claim Rejections - 35 USC § 103

2. Claims 12, 18; 13, 19 rejected under 35 U.S.C. 103(a) as being unpatentable over Donescu (PGPUB-DOCUMENT-NUMBER: 20020051560) in view of HAYASHI PGPUB-DOCUMENT-NUMBER: 20030161496, "DATA PROCESSING APPARATUS AND METHOD, AND MEMORY MEDIUM".

() Regarding Claims 12, 18:

12. (Currently Amended) *An image processing apparatus, comprising:*

a characteristics extracting unit to extract characteristics of wavelet coefficients (E14) *of one* ***or*** *a plurality of rectangular regions* (Fig2 top: 6 sub-bands) *dividing an image,*

wherein the characteristics of wavelet coefficients extracted by the characteristics extracting unit (E14) *are based on the frequency components* (E14. wavelet coefficients are frequency components.) *included in each of the rectangular regions;* (Fig2 top: 6 sub-bands)

an embedding specification determination unit (Fig 4) *to determine, in accordance with the extracted characteristics of the wavelet coefficients* (E14. Fig 4 "DWT coefficients") *for each rectangular region,*

(Fig2 top: 6 subbands. E32. "[0154] At the end of the spatio-frequency transformation of the DWT type, the blocks of coefficients are distributed in frequency sub-bands with different resolution levels.")_ *an embedding specification*

(E30. [0140] "E30 estimates the ...number of information bits which can be inserted..." [0145] At the end of ... E30, a set of valid sub-blocks ...to insert an information bit...)

of digital watermark data with respect to the wavelet coefficients,

(Fig 4. "[0152] Alternatively, certain message bits can be associated preferentially with certain spatio-frequency sub-bands of the spectral decomposition of the coefficients.")

a digital watermark embedding unit (E18, E33) *to embed the digital watermark data into the wavelet coefficients for each rectangular region* (sub-band) *in accordance with the embedding specification* ([0145] At the end of ... E30, a set of valid sub-blocks ...to insert an information bit...) *of each rectangular region.* (sub-band)

Donescu does disclose that certain sub-bands can get more bits than others, [0152] "certain message bits can be associated preferentially with certain spatio-frequency sub-bands.")

Donescu discloses everything except, *when a rectangular region includes a lot of high frequency components, the embedding specification determination unit determines that an amount of embedding information of the digital watermark data is heavy;*

HAYASHI discloses, [0216] "to embed digital-watermark information without deteriorating an original image, the digital-watermark information must be embedded in sub-bands composed of high-frequency components."

As HAYASHI discloses, it is desirable to embed the watermark into high-frequency sub-bands to preserve image quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention, to use HAYASHI's method in the method of Donescu, to preferentially embed more watermark signal into high frequency subbands.

() Regarding Claim 13, 19:

13. (Original) The image processing apparatus as claimed in claim 12, wherein the amount of embedding information of the digital watermark data is varied.

(Donescu. [0152] "certain message bits can be associated preferentially with certain spatio-frequency sub-bands.")

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3. Claims **15, 20** rejected under 35 U.S.C. 103(a) as being unpatentable over Donescu (PGPUB-DOCUMENT-NUMBER: 20020051560) in view of Rhoads (PGPUB-DOCUMENT-NUMBER: 20040001608), "Image processor and image processing method".

() Regarding Claims 15, 20:

15. (Currently Amended) *An image processing apparatus, comprising:*

a characteristics extracting unit to extract characteristics of wavelet coefficients of one or a plurality of rectangular regions dividing an image,

an embedding specification determination unit to determine, in accordance with the extracted characteristics of the wavelet coefficients for each rectangular region, an embedding specification of digital watermark data with respect to the wavelet coefficients,

a digital watermark embedding unit to embed the digital watermark data into the wavelet coefficients for each rectangular region in accordance with the embedding specification of each rectangular region.

(**All of the above limitations are addressed with regard to Claim 12.**)

Donescu discloses everything as addressed with regard to Claim 12 except,

wherein the characteristics of wavelet coefficients extracted by the characteristics extracting unit are based on whether the rectangular region includes a region of interest (ROI);

wherein when a rectangular region includes a ROI, the embedding specification determination unit determines that the embedding specification of the digital watermark data with respect to the wavelet coefficients is a strong embedding intensity.

Rhoads discloses, the characteristics of wavelet coefficients ([0085] "wavelet") *extracted* (Mask 222 extracts only ROI coefficients) *by the characteristics extracting unit are based on whether the rectangular region* ([0084] "The embedder depicted in FIG. 2 operates on blocks of image data (referred to as `tiles`)."

includes a region of interest (ROI); ([0093] "areas where there is more image activity")

wherein when a rectangular region ([0084] "The embedder depicted in FIG. 2 operates on blocks of image data (referred to as `tiles`)."

includes a ROI, ([0093] "areas where there is more image activity")

the embedding specification determination unit (218) *determines that the embedding specification of the digital watermark data with respect to the wavelet coefficients is a strong*

embedding intensity; ([0093] "increase watermark intensity in frequency bands and spatial areas where there is more image activity")

As Rhoads discloses, "[0093] the embedder makes a perceptual analysis 218 of the input image 220 to identify portions of the image that can withstand more watermark signal content without substantially impacting image fidelity." It is desirable to increase watermark strength without damaging image quality. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Rhoads method in Donescu, increase watermark intensity in an area of high image activity, ROI, not to damage visual image quality.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Max Shikhman whose telephone number is (571) 270-1669. The examiner can normally be reached on Monday-Friday 8:30AM-6:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, JINGGE WU can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Max Shikhman
11.19.2007

JINGGE WU
SUPERVISORY PATENT EXAMINER